

# N8 CIR Research Case Studies

## Richard Williams



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Richard Williams is a research software engineer specialising in Health Informatics.

Based at the University of Manchester, he has led the development and implementation of several award winning web applications for reducing patient harm, and is currently finishing a PhD titled “Applying software engineering principles to electronic health records in order to improve research and generate patient-specific actionable information”

### Can you give us an overview of the project?

Clinical codes are an integral part of health database research. They can define the categories of patients to be included in studies, their conditions, treatments received and clinical outcomes.

GetSet (<https://getset.ga>) is a web app that enables researchers to construct sets of these clinical codes for their research. Once created they can be saved, validated and reused by other researchers.

### What is the problem being addressed?

The construction of the clinical codes outlined above is vital to extract the information relevant to research. Any mistakes that are made at this stage will be costly, so validation of the code sets is critical.

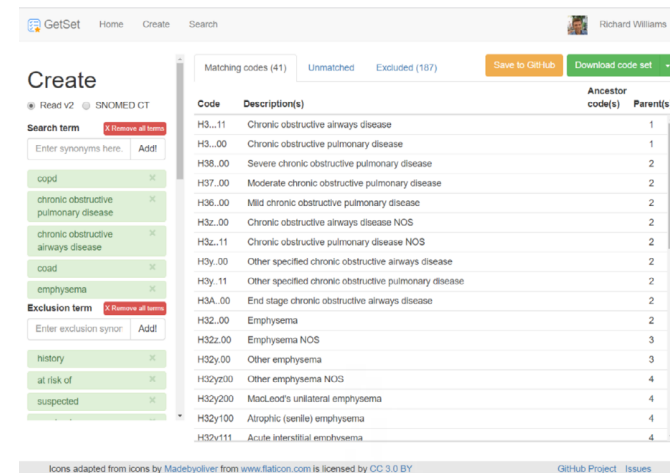
However, validation is difficult, especially when a code set may contain hundreds of codes. This also makes reuse difficult as, without validation, another researcher will not be able to trust the code set and will likely produce their own.

GetSet aims to solve these problems by capturing important metadata about the construction process. This allows researchers to confidently build code sets that are transparent, reliable and reusable.

### What were the benefits of working with an RSE?

As an RSE Richard was able to apply the principles of good software engineering from the start of the project.

Richard’s approach utilised automation to reduce errors and ensured that the codes sets are publicly available and version controlled; that software is thoroughly tested; and the code sets are machine readable by the use of intelligent metadata.



A screen grab taken from the GetSet web application

### Can you tell us more about your current or any future research projects?

We have several other web applications used in primary care.

SMASH finds patients at risk due to their medication and feeds the information to a pharmacist who can take action.

PINGR identifies patients with chronic conditions whose current treatment is sub-optimal and suggests improvements to their GP.

Both applications have completed successful trials in Salford, and are currently being rolled out across Greater Manchester.